Digital Modem Promotional Bundles for the Cisco 3600 Platform

Introduction

The Cisco 3600 series is a family of modular, multifunction access routers for medium and large-sized offices and smaller Internet Service Providers (ISPs). With more than 70 modular interface options, the Cisco 3600 family provides solutions for voice/data integration, virtual private network (VPN) dial access, and multiprotocol data routing. The high-performance, modular architecture of the Cisco 3600 series protects a customer's investment in network technology and integrates the functions of several devices into a single, manageable solution.

Now, with this announcement of new digital modem bundles, the Cisco 3600 expands its role as a remote access server/ concentrator making Cisco 3600 remote access configurations easier to order and available at very affordable price levels.

Figure 1 Cisco 3620

Figure 2 Cisco 3640

Table 1 describes the digital modem bundles being announced.

Table 1 Digital Modem Bundles

Part Number	Product Description
3640MBUNDLE-4B-S/T	Cisco 3640 BRI Dial bundle. Includes 1FE2W,12DM, 4 BRI-S/T, IP IOS
3640MBUNDLE-4B-U	Cisco 3640 BRI Dial bundle. Includes 1FE2W,12DM, 4 BRI-U, IP IOS
3640MBUNDLE-8B-S/T	Cisco 3640 BRI Dial bundle. Includes 1FE2W,18DM, 8 BRI-S/T, IP IOS
3640MBUNDLE-8B-U	Cisco 3640 BRI Dial bundle. Includes 1FE2W,18DM, 8 BRI-U, IP IOS
3620MBUNDLE-24DM	Cisco 3620 PRI Dial bundle. Includes 1FE2CT1-CSU, 24DM, IP IOS
3620MBUNDLE-30DM	Cisco 3620 PRI Dial bundle. Includes 1FE2CEI-U, 30DM, IP IOS Bal/Unbal configured by on-board jumpers
AS3640-T1-48DM	3600 Access Concentrator-48 MICA Modems+2 PRI/T1+1FE2W+IP IOS
AS3640-E1-60DM	3600 Access Concentrator-60 MICA Modems+ 1FE2W+IP IOS Bal/Unbal 2 PRI NM needs to be ordered separately

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Features at a Glance

Cisco 3640 PRI Bundles

- Easy ordering
- 48 or 60 active digital modems available
- Ethernet LAN connection
- Choice of WIC interfaces
- 56K (V.90) support for analog modems
- V.110 support
- Software upgradable modems
- High-performance routing engine
- VPN capabilities, including firewall, encryption, and tunneling options
- 60 modem bundles need to be ordered with separate Bal or unbal PRI NM
- Modem/Fax Dial-out support (via 3rd party applications)

Cisco 3640 BRI Bundles

- Easy ordering
- Four or eight BRI interfaces with S/T or U interfaces available
- 8 or 16 active digital modems available
- Ethernet LAN connection
- Choice of WIC interfaces
- 56K (V.90) support for analog modems
- V.110 support
- Software upgradable modems
- High-performance routing engine
- VPN capabilities, including firewall, encryption, and tunneling options
- Modem/Fax Dial-out support (via 3rd party applications)

Cisco 3620 PRI Bundles

- Easy ordering
- 24 or 30 modems available
- Built-in CSU on 24 modem version
- 30 modem version changeable from unbalanced to balanced
- 10/100 Ethernet LAN connection
- T1/E1 WAN connection
- 56K (V.90) support for analog modems
- V.110 support
- Software upgradable modems
- High-performance routing engine
- VPN capabilities, including firewall, encryption, and tunneling options
- Interface is Balanced/Unbalanced selectable-refer to http://www.cisco.com/warp/customer/cc/pd/rt/3600/prodlit/36dmp_ov.htm for more details
- Modem/Fax Dial-out support (via 3rd party applications)

Cisco 3600 Bundle Features and Benefits

The Cisco 3600 bundles, installed with the digital modem network modules and PRI/BRI interfaces, offer the most flexible, scalable, manageable, and high-performance dial access solutions available in the market today.

The Cisco 3620 PRI modem bundles utilize the mixed-media Fast Ethernet/PRI network module to offer support for up to 30 remote modem users at speeds up to 56 kbps. The bundle supports 24 or 30 integrated digital modems. The benefits of this bundle include ease of ordering (only one SKU), the ability to support remote users at the maximum connection speeds available, and the inclusion of the feature-rich Cisco IOS® software.

The new Cisco 3640 PRI modem bundles utilize a Fast Ethernet mixed-media network module (1FE2W) together with a 2 PRI network module to offer support for up to 60 remote modem users at speeds up to 56 kbps. The bundles support 48 or 60 integrated digital modems per chassis. Additional WICs can be ordered to match specific WAN requirements. The benefits of this bundle include ease of ordering (only one SKU), the ability to support remote users at the maximum connection speeds available, together with the inclusion of the feature-rich Cisco IOS software.

The Cisco 3640 BRI modem bundle utilizes the popular 1FE2W network modules to provide Ethernet LAN connectivity for up to 16 concurrent remote users, utilizing the four or eight port BRI network module.

Additional WICs can be ordered to match specific WAN requirements. The benefits of this bundle include ease of ordering (only one SKU), the ability to support remote users at the maximum connection speeds available, and the inclusion of the feature-rich Cisco IOS software. You get V.90 connectivity[1] and V.110 support without the expense of installing and maintaining a PRI connection.

The Cisco 3600 bundles can take incoming Integrated Services Digital Network (ISDN) or voice (modem) calls and automatically switch them to the appropriate internal circuitry. The PRI/BRI switching is based on Q.931 messaging in the ISDN D channel. This out-of-band signaling channel provides a way for the telephone network to label each call as to the type of call. Specifically, when an incoming call is labeled “voice” by the telephone network, the Cisco 3600 directs it to one of its modems. When a call is labeled “ISDN data,” it is directed to one of its High-Level Data Link Control (HDLC) controllers. The benefit

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here is one phone number for modem and ISDN users. R2 and CT1 interfaces also support this switching ability. Note: BRI WICs do not support this "call switching" feature.

The Cisco 3600 bundles provide complete, centrally managed modem capabilities, key requirements for branches and enterprises building midsize dial-in pools. The digital modems can be managed via the same Simple Network Management Protocol (SNMP)-based tools used to manage the rest of the network, providing network managers with one solution at a central management point. Optional enhanced modem management (Management Modem Technology License [MMTL]) capabilities allow for the gathering of modem statistics, real-time call-in-progress, monitoring modem activity log, modem hard/soft busy out, and the ability to accomplish modem firmware upgrades.

The installed modems can be utilized by LAN users for dial-out and fax-out applications, utilizing 3rd party applications such as clients available from Tactical Software. The modems can be assigned as dial-in, dial-out, or both. Dial-out support allows LAN users to utilize the modems during the day for outgoing calls and use the same modems in the evening for incoming calls from home users.

The ever-expanding numbers of remote users can be easily accommodated with the support for multilink multichassis PPP, allowing dial-in pools of lines to span numerous Cisco 3600 routers. This option gives users flexible, scalable bandwidth options by bonding channels together to provide amalgamated bandwidth. Through the use of Layer 2 Forwarding (L2F) technology and the exclusive Cisco Stack Group Bidding Protocol (SGBP), the Cisco 3600 can grow to meet the requirements of the fast-growing and frequently changing dial environments. Since the essential building block is a relatively small investment, enterprises and branch offices can scale from very small to larger installations.

The Cisco IOS software maximizes dial bandwidth, utilizing numerous features such as bandwidth on demand and protocol spoofing. These software features directly reduce line usage and reduce the cost associated with a remote-access solution.

Lower operating costs are achievable with the Cisco 3600s set of central management. The Cisco 3600 and its internal modems can be managed with CiscoWorks software. In addition, Cisco's configuration management capabilities provide network managers with complete control over network statistics and the ability to configure and tune network operations from a central location. Finally, comprehensive debugging tools in Cisco IOS software substantially reduce the time and cost associated with problem isolation and correction.

VPN Support

VPNs can help companies reap benefits such as dramatically lower WAN costs, improved global connectivity, and better reliability, while enabling capabilities such as secure extranet communications. Remote dial, Internet, intranet, and extranet access can all be consolidated over a single WAN connection to the Internet.

The Power of Cisco IOS Software for VPNs

The industry de facto standard networking software for the Internet and private WANs, Cisco IOS software delivers the most comprehensive set of VPN features on security, quality of service (QoS), management, and reliability/scalability. The Cisco 3600 bundles, with full Cisco IOS support and modular, integrated hardware, are designed for the new world of VPNs.

Consider the following VPN requirements:

- Crucial security for a VPN because the company's data traverses a shared unprotected WAN and the internal network of each office is exposed to this shared WAN. Advanced security features are integrated into Cisco IOS software of the Cisco 3600 bundles:
  - Firewall—The optional Cisco IOS Firewall protects the LAN from attacks. Context-based access control (CBAC) provides dynamic or stateful filtering on a per-application basis, permitting legitimate traffic to enter the LAN only while a session is active. CBAC capability is considered essential for effective firewall functionality. Cisco IOS Firewall also supports other key features such as Java blocking, denial-of-service detection and prevention, audit trail, and real-time alerts.
  - Encryption-—Optional IP Security Data Encryption Standard (IPSec DES) and Triple DES encryption up to 168-bit key length provides the strongest standards-based encryption to ensure confidentiality, data integrity, and data origin authenticity while traversing a shared WAN.
  - Tunneling—Several optional tunneling standards are supported: IPSec, generic routing encapsulation (GRE), Layer 2 Forwarding (L2F), and Layer 2 Tunneling Protocol (L2TP). L2F and L2TP support allows mobile workers to dial in to a service providers' local points of presence (POPs), tunnel traffic back to the Cisco 3600, and access resources such as databases residing on the LAN of the router. When the

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router is used in this way, it is called a home gateway or tunnel server. This setup obviates the need for a separate remote access server/concentrator at the small to medium-sized business and saves on long-distance calling charges. L2TP can also be used to tunnel non-IP traffic for connecting remote offices or users (IPSec tunneling supports only IP traffic). Device authentication and key management—Support for Internet Key Exchange (IKE), X.509v3 digital certificate, and Certificate Enrollment Protocol (CEP) with certificate authorities such as Verisign and Entrust ensures device and data authenticity and enables scalability to very large IPSec networks through automated key management.

  – User Authentication—User authentication provides support for Password Authentication Protocol (PAP), Challenge Handshake Authentication Protocol (CHAP), TACACS+, Remote Access Dial-In User Service (RADIUS), and token authentication.

- QoS (traffic management) for a VPN to provide the highest level of availability and predictability, QoS controls are needed with regards to which applications or users have access to how much bandwidth. Time-sensitive or mission-critical applications (for example, Enterprise Resource Planning applications such as PeopleSoft) should get priority over less-critical traffic (for example, push applications such as Pointcast). The Cisco 3600 supports leadership QoS features such as:

  – Committed access rate (CAR) performs three important functions on a per-application or per-user level: Classify traffic type (for example, is it PeopleSoft or Pointcast traffic?); set the maximum bandwidth allowed for that traffic (also known as “traffic policing” or “rate shaping”—for example, PeopleSoft gets 1.0 Mbps, Pointcast gets 28 kbps); and prioritize the traffic by giving each traffic type an “IP precedence number.”

  – Policy routing can also classify and prioritize traffic by IP precedence, but it also directs which type of traffic should go to which interface on the router. However, it does not set the allowed bandwidth like CAR does.

  – Weighted fair queuing (WFQ) provides consistent response time. It schedules low-bandwidth traffic to the front of the queue to reduce response time, and fairly shares the remaining bandwidth among high-bandwidth applications.

  – Generic traffic shaping (GTS) avoids congestion by controlling and smoothing outbound WAN traffic to a specified bandwidth. This feature is useful when the receiving router on the other edge of the WAN cannot handle the incoming traffic bandwidth.

Life Cycle-Focused Support Solutions

The comprehensive Cisco support portfolio delivers solutions that enhance the network throughout its life cycle. From design and installation to preventive and scheduled maintenance and performance optimization, Cisco solutions promote network reliability, efficiency, and flexibility. Designed to function as an integral product component, these programs deliver seamless support. Together, they proactively help organizations sharpen their competitive edge. Through access to the Cisco Connection Online (CCO) Web site, customers can both use and market expanded functionality and new features as soon as they become available. Moreover, access to Cisco technical expertise is available around the clock and around the globe. This virtual team of the worlds top networking engineers is equipped to address every need from troubleshooting to network design and planning.

Digital Modem Bundle Applications

Historically, branch office connectivity has been synonymous with connecting the local LAN to a regional or central site. With the rapid growth in mobile computing and telecommuting, more and more branch offices need to add user-to-LAN capabilities. At the same time, V.90 modems have become the standard for remote users and to satisfy their throughput requirements, many enterprises and smaller ISP’s are installing digital PSTN connections, either ISDN BRI or PRI, at their premises.

The Cisco 3600 PRI bundles are designed to address the 1/2 PRI digital dial markets, providing a powerful routing engine and a competitive price point. Up to 60 concurrent users are supported.

Figure 3 illustrates a typical application for the Cisco 3620 PRI modem bundle.

For basic telephone users, both 33.6 K and 56 K modem calls can be terminated through the PRI connection into a digital modem network module. Users including mobile workers and people working from hotel rooms. For teleworkers with access to Basic Rate Interface (BRI), the same phone number could be used to connect to the same Cisco 3600, achieving 64 Kbps noncompressed, or with multilink PPP, 128 kbps. V.110 connectivity (used with GSM phones) is also available.

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Backhaul (or WAN) options are available to link back to a corporate network, at speeds up to 2 Mbps. If no WAN is required, up to 60 remote users could be accommodated (30 modem and 30 BRI users). When the 3640 PRI bundle is utilized, up to 60 concurrent remote users can be accommodated.

Figure 3 Cisco 3620 PRI Bundles

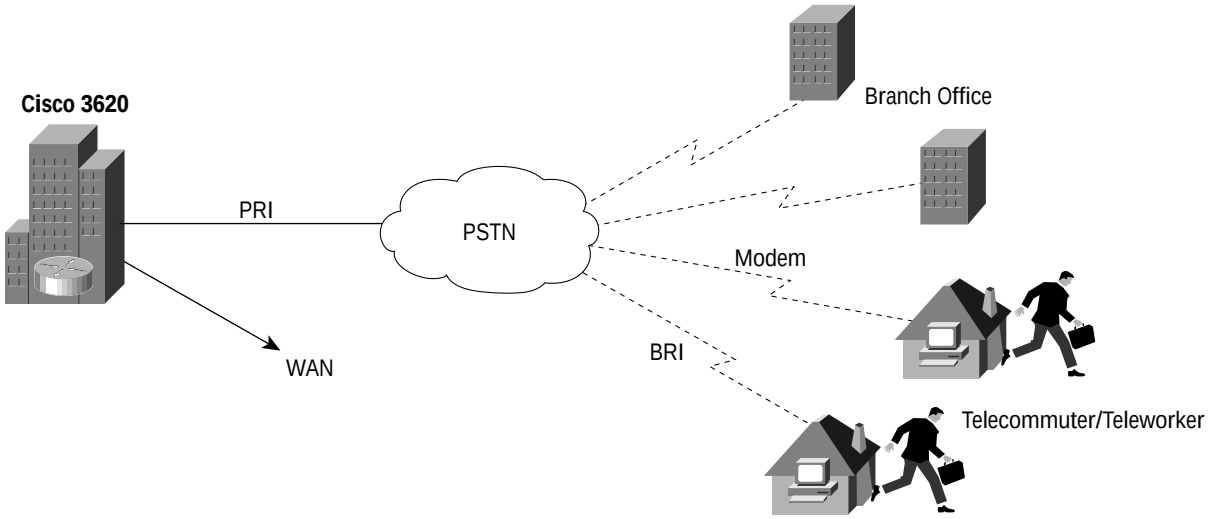
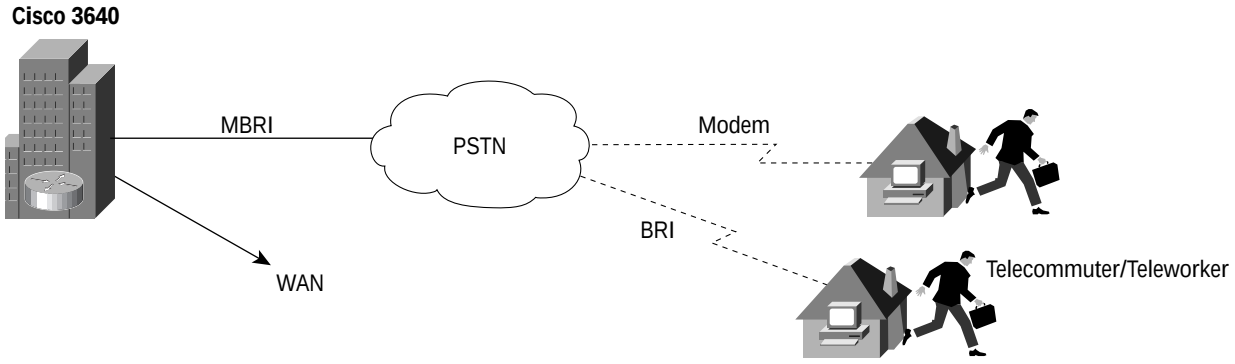


Figure 4 illustrates a typical application for the Cisco 3640 BRI modem bundle.

For basic telephone users, both 33.6 K and 56 K modem calls can be terminated through the BRI connection into a digital modem network module. Users including mobile workers and people working from hotel rooms. For teleworkers with access to BRI, the same phone number could be used to connect to the same Cisco 3640, achieving 64 Kbps noncompressed, or with multilink PPP, 128 kbps.

Backhaul (or WAN) options are available to link back to a corporate network, at speeds up to 2 Mbps. Other WAN options available include HSSI, ATM 25 and ATM OC3 (these options require additional NMs to be installed).

Figure 4 Cisco 3640 BRI Bundles



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Orderability, Availability, Software Requirements, Memory Requirements

Product	Orderable	Available	Cisco IOS Version
3640MBUNDLE-4B-S/T	Feb. 1999	Feb. 1999	12.1.(5)T
3640MBUNDLE-4B-U	Feb. 1999	Feb. 1999	12.1.(5)T
3640MBUNDLE-8B-S/T	Feb. 1999	Feb. 1999	12.1.(5)T
3640MBUNDLE-8B-U	Feb. 1999	Feb. 1999	12.1.(5)T
3620MBUNDLE-24DM	Feb. 1999	Feb. 1999	12.1.(5)T
3620MBUNDLE-30DM	Feb. 1999	Feb. 1999	12.1.(5)T
AS3640-T1-48DM	July 1999	July 1999	12.1.(5)T
AS3640-E1-60DM	July 1999	July 1999	12.1.(5)T
MMTL 3600	Feb. 1999	Feb. 1999	“Plus” IOS version

Ordering Information

Part Number	Product Description
3640MBUNDLE-4B-S/T	Cisco 3640 BRI Dial bundle. Includes 1FE2W,12DM, 4 BRI-S/T, IP IOS
3640MBUNDLE-4B-U	Cisco 3640 BRI Dial bundle. Includes 1FE2W,12DM, 4 BRI-U, IP IOS
3640MBUNDLE-8B-S/T	Cisco 3640 BRI Dial bundle. Includes 1FE2W,18DM, 8 BRI-S/T, IP IOS
3640MBUNDLE-8B-U	Cisco 3640 BRI Dial bundle. Includes 1FE2W,18DM, 8 BRI-U, IP IOS
3620MBUNDLE-24DM	Cisco 3620 PRI Dial bundle. Includes 1FE2CT1-CSU, 24DM, IP IOS
3620MBUNDLE-30DM	Cisco 3620 PRI Dial bundle. Includes 1FE2CE1-U, 30DM, IP IOS
AS3640-T1-48DM	3600 Access Concentrator-48 MICA Modems+2 PRI/T1+1FE2W+IP IOS
AS3640-E1-60DM	3600 Access Concentrator-60 MICA Modems+1FE2W+IP IOS

Supported Configurations

- Cisco 3620 PRI bundle: a variety of Cisco IOS feature sets
- Cisco 3640 PRI bundle: a variety of Cisco IOS feature sets
- Cisco 3640 BRI bundle: a variety Cisco IOS feature sets and/or a choice of WAN Interface Cards (WICs)

For Cisco IOS memory requirements, please reference the Cisco product bulletin #544.

Technical Specifications

Physical Characteristics

Cisco 3620 PRI Bundles

- 1FE2CT1-CSU, 24DM, IP IOS
- 1FE2CE1-U, 30DM, IP IOS

Cisco 3640 PRI Bundles

- 1FE2W,48DM, 2 PRI/CT1, IP IOS
- 1FE2W,60DM, 2 PRI/E1 (ordered separately), IP IOS

Cisco 3640 BRI Bundles

- 1FE2W,12DM, 4 BRI, IP IOS
- 1FE2W,18DM, 8 BRI, IP IOS

Modem Protocols Supported

Carrier Protocols

- V.90 (requires Portware 2.5.1.0 and Cisco IOS 11.(2)16P or IOS11.3.(6)T or higher)
- K56Flex
- V.110 support
- ITU V.23 at 75/1200 bps
- Bell 103 at 300 bps
- ITU V.21 at 300 bps
- ITU V.22 at 1200 bps
- Bell 212A at 1200 bps

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- ITU V.22bis at 2400 bps
- ITU V.32 up to 9600 bps
- ITU V.32bis up to 14,400 bps
- V.32 turbo up to 19,200 bps
- V.34 up to 33,600 bps

Error Correcting Link Access Protocols
- V.42 LAPM, MNP 2-4

Compression Protocols:
- V.42bis (includes MNP-5)

Upgradability
Software upgradable to future modem and fax standards.

Modem Management (optional)
This option provides for modem statistics, real-time call-in-progress, monitoring modem activity log, and modem hard/soft busy out. For further details, reference the digital modem management document support.

Positioning
The Cisco 3600 modem bundles expand the Cisco dial product line, now with products from the Cisco 2509-12 series to the Cisco 3600 series and the Cisco 5X00 series, making up a broad range of dial solutions targeted at wide variety of market segments, including small branch, enterprise, ISPs, telcos, and carriers.

These new Cisco 3600 bundles offer high-performance, low-density digital dial at a affordable price.

Other dial focused network modules of the Cisco 3600 include 16- and 32-port high-density async network modules, ISDN network modules, eight and 16-port analog modem network. These modules address the high-density async market (up to 192 async ports) for external modem banks and terminal servers, the ISDN consolidation market (eight PRI or 48 BRI), the mid density analog modem market, and the mid density hybrid market (30-90 digital modems), all utilizing a high-performance routing engine.

Summary

The Cisco 3600 modem bundles allow branch offices and small ISPs to easily deploy the popular Cisco 3600 routers as remote access servers, to take advantage of new powerful access server/concentrator related features of Cisco IOS.

The Cisco 3600 modem bundles are a great complement to the Cisco AS5X00 series of remote access servers, extending the range functionality and price points available to the remote access server/concentrator buyer.

[1]Note: actual speeds vary, depending on line conditions. Because of FCC limitations, speeds in the United States are less than 56 kbps.

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